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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/696,928	10/30/2003	George E. Berkey	SP03-140	8228
22928	7590	12/14/2005		
CORNING INCORPORATED			EXAMINER	
SP-TI-3-1			LEPISTO, RYAN A	
CORNING, NY 14831			ART UNIT	PAPER NUMBER
			2883	

DATE MAILED: 12/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/696,928

Applicant(s)

BERKEY ET AL.

Examiner

Ryan Lepisto

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,4 and 7-18 is/are rejected.
- 7) ☒ Claim(s) 2,5,6 and 19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>8/5/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. **Claims 1, 3-4, 7, 10-11, 13-18 and 20** are rejected under 35 U.S.C. 102(e) as being anticipated by **Fermann (US 2002/0172486 A1)**. Fermann teaches a polarization preserving and highly birefringent optical fiber (greater than 10^{-6} , paragraph 0070) laser and/or amplifier where the polarization is stable (mode-locked) and produces an enlarged output bandwidth range (Fig. 14) near 1030 nm (like applicant's) that includes the polarization range of the cavity (paragraphs 0003-0012, 0040-0041). The laser amplifier comprises a pump signal source (Fig. 12) from a pump diode coupled to a waveguide (Figs. 1 or 5b) for exciting a plurality of active dopants (paragraph 0068) for providing gain (to function as an amplifier) to an output light that is broadband light that is selectively filtered by a grating (Fig. 12, paragraph 0087) by a predetermined wavelength range within a polarization wavelength range. The waveguide further comprises doped elliptical core (Fig. 1), either single asymmetric depressed clad (Figs.

6a-c, 7a-c), or a double-clad elliptical core waveguide (Figs. 1, 4b, 5b) with an aperture disposed about the core, inner clad and outer clad (paragraphs 0066, 0067, 0070).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 8 and 9** are rejected under 35 U.S.C. 103(a) as being unpatentable over Fermann as applied to claims 1, 3-4, 7, 10-11, 13-18 and 20 above, and further in view of **Sanders et al (US 5,912,910)** (Sanders).

Fermann teaches the fiber laser/amplifier described above.

Fermann does not teach expressly an undoped single polarization fiber spliced to the polarization preserving and highly birefringent optical fiber or the grating being a Bragg grating or the single polarization device.

Sanders teaches pumped fiber laser/amplifier that uses a single polarization fiber with a Bragg grating (112) coupled to the pump source and polarization preserving and highly birefringent optical fiber (69) (Figs. 13, 17, column 22 lines 5-10).

Fermann and Sanders are analogous art because they are from the same field of endeavor, pumped fiber lasers/amplifiers.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to couple the pump source via a single polarization fiber with a Bragg

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grating as taught by Sanders in the system taught by Fermann in Fig. 12 wherein a pump source is coupled to a grating and to a polarization preserving and highly birefringent optical fiber.

The motivation for doing so would have been to increase power and efficiency by creating a polarized output beam by introducing polarization dependent loss (Sanders, column 22 lines 21-24).

3. **Claim 12** is rejected under 35 U.S.C. 103(a) as being unpatentable over Fermann as applied to claims 1, 3-4, 7, 10-11, 13-18 and 20 above, and further in view of **Tumminelli et al (US 5,166,940)** (Tumminelli).

Fermann teaches the fiber laser/amplifier described above.

Fermann does not teach expressly the dopant being Erbium.

Tumminelli teaches pumped laser/amplifier using a rare earth (Erbium) doped core with gratings.

Fermann are analogous art because they are from the same field of endeavor, pumped fiber lasers.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use Erbium as taught by Tumminelli in the system taught by Fermann since Fermann teaches rare earth elements may be used as the dopant (Fermann, paragraph 0069).

The motivation for doing so would have been increase output power by providing a dopant that provides necessary optical gain to effect lasing (Tumminelli, column 3 lines 53-56).

Allowable Subject Matter

4. **Claims 2, 5-6 and 19** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

With regard to claims 2 and 19: These claims would be allowable over the prior art of record if rewritten in independent form including all of the limitations of the base claim and any intervening claims because the latter, either alone or in combination, does not disclose nor render obvious a PM fiber having fiber polarization components along a first linear characteristic mode and second linear characteristic mode with a sufficient differential polarization dependent loss between first and second modes accumulated over a sufficiently long wavelength length such that the first polarization mode has a first attenuation of 3 dB at a first cut-off wavelength and a second polarization has a second attenuation of 3 dB at a second cut-off wavelength to provide the single polarization wavelength range having a single polarization center wavelength between the two cut-off wavelengths with the first cut-off wavelength being less than the second and the single polarization center wavelength is sufficiently close to the center

operating wavelength or a linear single-polarization double-clad fiber laser having an elliptical shaped core to provide a large modal area having a core index delta to provide a numerical aperture of about 0.06 to 0.08, in combination with the rest of the claimed limitations.

With regard to claims 5 and 6: These claims would be allowable over the prior art of record if rewritten in independent form including all of the limitations of the base claim and any intervening claims because they depend from claims with allowable subject matter.

Response to Amendment

5. The amendment filed 14 November 2005 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: In paragraph 0036, the laser gain of Fig. 6 was changed from "1020 to 1100 nm" to "920 to 1100 nm". The new range is new matter and additional is not supported by Fig. 6.

Applicant is required to cancel the new matter in the reply to this Office Action.

Response to Arguments

6. Applicant's arguments filed 14 November 2005 have been fully considered but they are not persuasive. Applicant states that Fermann does not teach a linearly birefringent and linearly dichroic optical waveguide as defined by the two principal

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states of propagation of the medium in question being linearly polarized and that such two linear states of polarization have different effective real part (refractive index) of the propagation constants and the polarization also having a different imaginary part (loss) of the propagation constant (as defined in paragraph 0037 of the specification).

Applicant further states that Fermann exclusively teaches the use of a polarization maintaining fiber (arguments, page 5). In paragraphs 0043 and 0046 of the specification, the applicant clearly defines polarization-maintaining fibers as a subset of linearly birefringent and linearly dichroic waveguides. Applicant explicitly says, "PZ or PM (polarization maintaining) shall mean both linearly birefringent and linearly dichroic." Since the applicant clear states that a polarization maintaining fiber is both linearly birefringent and linearly dichroic, the Fermann rejection stands and has been repeated again above.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan Lepisto whose telephone number is (571) 272-1946. The examiner can normally be reached on M-F 7:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ryan Lepisto

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Date: 12/8/05



Frank Font

Supervisory Patent Examiner

Technology Center 2800